Internally Illuminated Road Studs

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What are Internally Illuminated studs?
Internally illuminated road studs

Two Types

- Solar Powered

- ‘Hardwired’ systems
Internally illuminated road studs

Solar Powered Studs

Components:

- Solar Panel
- Polycarbonate/Metal casing
- Reflective face
- LED outputs
  - These range between 1 and 3 per side for available stud types.
  - The number of LED’s can affect output length
- Energy Storage device – e.g., Nickel Metal Hydride battery
Internally illuminated road studs
Solar Powered Studs

How do they work?

Solar cell captures daylight energy

Batteries and control circuit inside marker

LED automatically activates dusk to dawn 100lux threshold
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Solar Powered Studs

Expected Lifespan - 3 to 7 years

- Dependant on:
  - Installation location
  - Quality of materials
  - Number of LED’s

- Min 1000 on/off cycles as per M/29 spec
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**Solar Powered Studs**

Where are they suitable?

- Areas with poor/no street-lighting
- Dangerous Curves
- Rural Roads
- Bridges / Barriers / Shared Paths
- Poor visibility roads
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* Diagrams not to scale - for illustration only

Standard RRPMS

Extra reaction time gained from Astucia’s increased vision

90m reflection

30s

900m visibility from Intelligent Road Studs

90m reflection
A4226 – Barry, South Wales

• 72% reduction in night time accidents reported by Vale of Glamorgan Council since installation, compared with previous 3 years
A4226 – Barry, South Wales

- The proven safety benefits of the scheme has been recognised by being winner of the “Road Marking Project of the Year” in the prestigious 2008 Highways Excellence Awards
A143 – Haddiscoe, Norfolk

- Norfolk CC advised: the overall accident frequency has reduced from 7.3 per year to 2.3 whilst the severity ratio has reduced from 36% to zero
In the 12 months following the installation there were no night time accidents, previously 88 serious accidents claimed 27 lives in seven months.
Solar Powered Studs

How do you install them?

- Surface mounted Studs

  - 'Aim' Stud approx 30m up the road to the middle of the lane

  - Install using conventional RRPM techniques and adhesive

  - In theft-prone areas (urban installations) use a stronger epoxy such as Megapoxy Gungrade 36
Criteria - M/29 Specification

- Must meet M12 specs (size/colour/etc)
- Must be 1P68 rated
- Min full 7 nights activation with no solar input
- Min 1000 on/off cycles (approx 3 years)
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‘Hardwired’ studs

A more site specific installation with powered cables between the studs
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Hardwired studs

How do they work?

• Two types
  • Hardwired studs - a power and control cable between each stud (Eg; Astucia)
  • Inductive Power - Cable in the road under a row of studs that can be activated by placing on top of the cable (Eg; 3iii studs)
Hardwired studs

Hardwired studs – a power and control cable between each stud (Eg; Astucia)

- Flush mounted - 1 tonne point load
- Requires Power source
- Can be controlled - flash, time sequence etc
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Hardwired studs
Inductive powered studs - An inductive cable that is run in sawcut and the studs are placed on top (Eg: 3iii smartstuds)

- Surface mounted
- Requires Power source and control box
- Can be controlled - colour/flash/intensity
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Hardwired Studs

Differences to Solar Studs

• Up to 14 LED’s in each stud head, in each direction
  • MUCH brighter
  • Can be used during Day hours as well

• Can be multicoloured / switch colours
  • Eg: Green normally, Red after an input

• Can be externally triggered
  • Pedestrian pad / Road loop / Video detection
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**Hardwired Studs**

*Where are they suitable for installation?*

- Pedestrian crossings
- Dual right turns at signalised intersections
- Lane control
- Airports
- Dangerous intersections needing active controls
Hardwired Studs
How do you install them?

- A lot more site-specific
- Trained crew for installation for each type
- Typically carried out by the supplier
- Requires Sawcutting and/or Coring
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Criteria - No Specification Yet

- As yet there is no spec for the Hardwired studs
- Each installation evaluated individually